

## Claims

1. An optical transmission apparatus, comprising:  
a frequency converter that converts a frequency band of an electric  
5 signal to be transmitted, into a specific frequency band higher than the  
frequency band; and  
an electro-optic converter that performs electro-optic conversion on the  
frequency-converted electric signal by a laser or an optical modulator.
- 10 2. The optical transmission apparatus according to claim 1, wherein a  
frequency converter converting the frequency band into a frequency band not  
lower than 500 MHz is used as the frequency converter, and a single-mode  
oscillation laser is used as the electro-optic converter.
- 15 3. The optical transmission apparatus according to claim 1, wherein a  
frequency converter converting the frequency band into a frequency band not  
lower than 200 MHz is used as the frequency converter, and a multi-mode  
oscillation laser is used as the electro-optic converter.
- 20 4. An optical transmission apparatus, comprising:  
a frequency converter that converts a frequency band of an electric  
signal to be transmitted, into a frequency band lower than the frequency band  
and not lower than 500 MHz; and  
an electro-optic converter that performs electro-optic conversion on the  
25 frequency-converted electric signal by a single-mode oscillation laser.

5. An optical transmission apparatus, comprising:
- a frequency converter that converts a frequency band of an electric signal to be transmitted, into a frequency band lower than the frequency band
- 5 and not lower than 200 MHz; and
- an electro-optic converter that performs electro-optic conversion on the frequency-converted electric signal by a multi-mode oscillation laser.
6. An optical transmission system, comprising an optical transmission
- 10 apparatus that performs electro-optic conversion on an electric signal to be transmitted and feeds out the electric signal to an optical transmission line, the optical transmission line that transmits an optical signal transmitted from the optical transmission apparatus, and an optical reception apparatus that receives the optical signal transmitted from the optical transmission apparatus through
- 15 the optical transmission line and performs opto-electric conversion on the optical signal so as to receive the original electric signal,
- wherein an optical transmission line with total return loss of not lower than 60 dB is used as the optical transmission line; and
- wherein an optical transmission apparatus according to any one of
- 20 claims 1 through 5 is used as the optical transmission apparatus.